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CONTRIBUTIONS
TO THE
PATHOLOGY OF THE HEART.

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PATHOLOGY OF THE HEART.

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I. *Inflammatory Affections.*

IT seems to be impossible to distinguish in practice, betwixt inflammation of the pericardium and inflammation of the membrane covering the heart; nor do I consider it as being of much practical importance. The probability is, that inflammation beginning in the one, so readily spreads to the other, as to constitute, at a very early period, the same disease. The affection occurs under various forms, and in some of them is very difficult of detection in its early stages. It may be acute or chronic, idiopathic or symptomatic; but, in all its forms, it is a disease of extreme danger. The following case is an example of acute, idiopathic carditis, or perhaps primarily pericarditis.

CASE I.

A young lady, aged sixteen, came under my care on the 8th January 1812, affected with acute pain, which was referred to the pit of the stomach. It very much impeded respiration, and at times prevented the least attempt at taking a full breath. The breathing, consequently, was very short and quick, with extreme anxiety and restlessness; but there was no cough, and no vomiting. Pulse from 120 to 130. She was largely bled; and, in the course of few days following, the bleeding was repeated seven or eight times. Blistering, digitalis, and the other usual remedies, were also employed in the most active manner, but with little effect upon the pain, which continued, with very little abatement, for nearly a fortnight, while active treatment could be carried no farther. During the whole of this period she was in constant, acute pain, with very short breathing, extreme restlessness, a good deal of delirium, and almost no sleep; the pulse generally 130. Still there was no cough. At length, in the third week, the pain abated, and she could take a full breath with very little uneasiness. Pulse 120. She then fell into a state resembling chorea, with convulsive agitations of the limbs, constant motion of the head, and wild rolling of the eyes. Delirium continued, which soon increased to such a degree, that for several days she was with difficulty kept in bed. She then did not complain

of any pain, and the breathing was natural; the pulse 120, and very small. By cold applications to the head, these symptoms subsided in a few days; and she then gradually recovered her usual health, except that her pulse continued more frequent than natural. She continued well till the 20th of April (the same year), when, having been exposed to cold and fatigue, she was seized as before, but the pain was more towards the left side. It greatly impeded respiration, and was accompanied with great anxiety and restlessness. By large bleeding, blistering, &c., she was very much relieved; so that, on the 25th, hopes were entertained that she was out of danger. But she then became suddenly worse, with severe dyspnœa, great anxiety, vomiting, and rapid sinking of the vital powers; and she died on the 26th.

Dissection.—The pericardium adhered to the heart, through its whole extent, by means of a very thick layer of coagulable lymph, which was interposed between them. It was soft, and easily separated. There was a deposition of the same kind on the outer surface of the pericardium, in some places nearly half an inch in thickness. The surface of the heart was dark coloured, and very vascular. The lungs were in some places inflamed and indurated. The other viscera were healthy.

In the two following cases, the symptoms were less acute, and in both of them extremely obscure.

CASE II.

A boy, aged seven, in February 1819, had acute rheumatism, with symptoms of carditis, which were soon relieved by bleeding, and he enjoyed good health till November of the same year, when, after being feverish for some days, he was seized with pain of the left side, cough, and difficult breathing. For these symptoms, he was treated by an able and intelligent surgeon with repeated bloodletting, and the other usual remedies, and the local symptoms were speedily relieved; his pulse, however, continued extremely frequent. I saw him about ten days after the attack. He had then some cough, but it was slight; there was no pain, and no difficulty of breathing; there was no unusual pulsation in the thorax; the tongue was clean, and the appetite and bowels natural; but the pulse was from 120 to 130. His sleep was sometimes good, and sometimes disturbed. During some nights he had considerable cough, in others little or none. In this state he continued for a week; at times disposed to sit up in bed and amuse himself through the day; at other times more disposed to be quiet, but still without any symptom except the constant frequency of pulse. About the tenth day from the time when I first saw him (the twentieth of the disease), he complained of pain in the left side, which was referred to the upper part of the abdomen, as if in the region of the spleen. It was in-

creased by pressure, and he complained very much of pressure over the whole upper part of the abdomen. The breathing was a little oppressed; the pulse frequent and full. These symptoms had commenced during the night. Bloodletting, both general and topical, was employed freely through the day, and in the evening he was much relieved. He passed a quiet night, but on awaking in the morning, he was seized with slight convulsion. He then sunk into a low exhausted state, and died in half an hour.

Dissection.—The abdominal viscera were all sound, and the lungs quite healthy. The pericardium adhered to the heart through its whole extent, except a small portion at the lower and posterior part. The adhesion consisted, in some places, of a soft, gelatinous matter; in others, of a firm, reddish substance, like the substance of healthy granulations; but the whole was soft, and easily torn by the finger, and when it was cleared away, the anterior surface of the heart was covered with firm, irregular elevations, like small granulations.

CASE III.

A boy, aged ten, had been for several years extremely delicate, being liable to cough and to diarrhoea, from slight exposure to cold, the diarrhoea sometimes proving tedious and untractable. In the end of March 1821, he had measles: the eruption

did not come out freely, but he had not at that time any urgent symptom. After a few days, he was attacked with diarrhoea ; and it was on account of this affection that I was consulted (along with Mr Hardie), in the second week of his illness. He was, at this time, up and dressed, but looked pale and thin, with a small, frequent pulse : he had slight cough ; little appetite, and bad sleep ; frequent diarrhoea, and considerable pain in the abdomen. After several days, the diarrhoea subsided considerably, but returned after a few days more, and required constant attention. His pulse continued frequent, and his breathing was rather quick, but his cough was not troublesome : he did not complain of any pain, and he took a full breath without uneasiness. In this manner he passed eight or ten days ; the tendency to diarrhoea, and small frequent pulse, being the only prominent symptoms. After this period, his cough became more troublesome, and he complained once of a slight pain in the left side. For this a blister was applied, and the pain was no more heard of. But his strength was sinking ; he became pale and exhausted, with lividity of the lips, while the cough was by no means severe, and the breathing was not difficult. The pulse was, as before, small and frequent, and the action of the heart was stronger than natural. He then fell rather suddenly into a state of extreme exhaustion ; the skin cold ; the look haggard ; the pulse extremely feeble ; while the loss of muscular strength was not in proportion to the other appearances of

exhaustion : the cough was not severe, and he drew a breath without uneasiness. The diarrhoea by this time had subsided, and, upon the whole, his state was peculiar ;—the state of sudden exhaustion being such as there appeared no symptom which fully accounted for it ; while, at the same time, he was taking food and wine freely, without any effect in relieving him. He lay in this state two or three days, and then died, about a month from the time when he had measles. Towards the conclusion of his life, it was observed, that pressure on the upper part of the abdomen gave him great uneasiness, especially if it was made towards the left side.

Dissection.—The lungs were extensively tubercular, with numerous small vomicæ. On laying open the pericardium, nothing was seen but masses of coagulable lymph. There was no adhesion of the pericardium to the heart, but one continued surface of firm, yellow, adventitious membrane, which lined the pericardium, and was continued over the whole surface of the heart, in general a quarter of an inch thick, and with loose, irregular, flocculent masses of the same substance, lying in the cavity. There was slight ulceration of the mucous membrane of the intestines in several places.

A remarkable circumstance in the history of this dangerous affection is, that it may be going on rapidly, yet insidiously, in the course of another disease, while our attention is occupied by symptoms which have no relation to it.

CASE IV.

On the 9th of August 1821, I was consulted about a girl, aged twelve, on account of erysipelas of the face. It was not severe, being nearly confined to the right cheek, but was accompanied by a considerable degree of fever, which had rather a typhoid type, but without any appearance of danger, the only remarkable symptom being a great obstinacy of the bowels. The case was of three days standing. For several days more the bowels resisted various remedies, with antimonials, &c., but at last yielded; and, about the twelfth day of the disease, the case had every appearance of terminating favourably. About the sixth or seventh day, I had found her in the morning complaining of pain in the left side, for which bleeding was recommended, but it was not done, on account of the pain subsiding soon after the visit: it was never complained of again, and the breathing was natural. On the 12th, 13th, and 14th days, all the appearances were favourable. The erysipelas had terminated by desquamation,—the fever had subsided,—the tongue was clean,—the appetite returning. On the morning of the 15th day, she appeared low and depressed, in a manner which was not easily accounted for, considering that she had been taking food with appetite for two days, and on that morning taken her breakfast with relish; her pulse was slow, and rather irregular, and the body cold. The coldness in-

creased with rapid sinking, and she died about two o'clock, P. M.

Dissection.—The brain, lungs, and abdominal viscera were healthy, except diseased mesenteric glands. The pericardium was distended, with about $\frac{3}{4}$ of a turbid, milky fluid, with flocculent matter floating in it. The whole inner surface of the pericardium, and the outer surface of the heart, were covered by a uniform coating of coagulable lymph, of considerable thickness. The substance of the heart was soft and flaccid.

To this remarkable case I may add another equally important, which is mentioned by Dr Newman in a late number of Hufeland's Journal. A man, aged twenty-six, who had been affected with cough for some months, was seized with pneumonic symptoms on 5th November 1820. After bleeding, and the other usual remedies, he was much relieved; he was free from pain, and had no uneasiness in breathing; cough continued with free expectoration; and though his pulse continued a little frequent, he was considered as convalescent, and was able to walk about in his chamber. This was his condition on the 12th. During the night he was heard to groan, and in a few minutes was dead.

On *dissection*, the right lung was found hepatised, the left shewed traces of inflammation externally, but was otherwise sound. The pericardium was red and thickened, and contained a considerable quantity of yellowish fluid. Its whole inner sur-

face, and the whole outer surface of the heart, were covered by a thick adventitious membrane, which extended to the origin of the great vessels.

The disease appears under another form in the following remarkable case, in which the cause of death is not very obvious.

CASE V.

A man, aged fifty-five, of a florid complexion and full habit, several years before his death consulted me on account of symptoms exactly resembling those of Angina pectoris. He was bled and purged, and restricted to a spare diet; and under this treatment the complaint disappeared entirely. He then enjoyed good health till winter 1819, when he was seized with violent pain in the region of the heart, with much anxiety and oppression of breathing; there was some cough, and the pain was increased by respiration; the pulse frequent, but soft. He was bled and blistered, and in the course of a day the symptoms were removed. He continued for some time weak, but gradually recovered his former health, and returned to his usual employment. About three weeks after the attack, he went to bed one evening in perfect health; about three o'clock in the morning was heard to groan heavily, and in a few minutes was dead.

Dissection.—The lungs were sound. The pe-

pericardium adhered to the heart on the right side, for a space about the extent of a crown-piece; the adhesion was soft, and seemed quite recent. The substance of the heart was soft and flaccid, and all the cavities were quite empty. There was a small quantity of bloody fluid in the pericardium, and a little in the cavity of the pleura. The brain was healthy.

When the inflammatory affections of the heart are not speedily fatal, as in the above cases, they are apt to terminate by adhesion of the pericardium to the heart, and the disease, then passing into a chronic state, may go on for months or years, and be gradually fatal by protracted suffering. In some of these cases the symptoms are extremely obscure and undefined; but in general we find violent action of the heart, with more or less uneasiness in breathing, and at last dropsical affections, or death by gradual exhaustion without dropsy. This condition may supervene upon an acute attack, or the adhesion may take place in a slow, insidious manner, without any acute symptoms. The following cases illustrate this state of the disease. In one of them it was complicated with thickening, and adhesion of the valves.

CASE VI.

A gentleman, aged sixty-eight, on the 7th June 1820 was seized with a severe fit of dyspnœa, which

was relieved by a draught with ether. He then continued well till the 20th of August, when he had another severe attack, which did not yield to antispasmodics, but was relieved by a bleeding. Within a few days he had two attacks, very severe, in one of which he was again bled. When the paroxysm was over, he did not complain of any pain, and could take a full breath without uneasiness. A few days after the last of these paroxysms, he was seized with hæmoptysis, rather copious; he continued to expectorate blood in considerable quantities for about a week, and for some time longer the expectoration was tinged with it. In the beginning of September, anasarca of the legs began to appear. From this time he had repeated threatenings of dyspnœa, which were, however, checked by antispasmodics; but, about the middle of September, his breathing became permanently difficult, and he could only lie on his back, with his shoulders much raised; the pulse generally about 84, and regular. These symptoms had been partially relieved by purgatives and diuretics; but the relief was only temporary. I saw him, for the first time, about the 10th of October, along with Dr Macauley. I found him sitting up, his legs much swelled, and his face pale and exhausted. He complained of oppression of breathing when he lay down; but while sitting up he seemed to breathe with little difficulty, and could take a full breath without uneasiness; the pulse about 90, and regular; the pulsation of the heart was obscure and undulating. On the 17th, he

was again seized with hæmoptysis to some extent, and died on the 23d, having been confined to bed only two days; and during that time, he complained, for the first time, of pain in his left side. About a month before his death, a strong pulsation was remarked in the vessels of the neck. It occurred in paroxysms, and was observed only a few times, accompanied by lividity of the countenance, and a degree of stupor.

Dissection.—There was about $\frac{1}{2}$ l. of bloody fluid in the left cavity of the pleura, and $\frac{1}{2}$ ss. in the right. The lungs were much gorged with blood, but not diseased in their structure. There was extensive adhesion betwixt the pericardium and the heart, especially at the apex, and along the posterior part. It was most intimate at the apex, where it was very close and uniform; at other parts it consisted chiefly of bands of various extent; the anterior part was pretty free. The left ventricle was considerably enlarged in its cavity. The liver was pale; the other parts healthy.

CASE VII.

A man, aged twenty-three, died after an illness of seven months, in which the symptoms were rather obscure. When I saw him a short time before his death, he was much emaciated, but without any cough or expectoration. He had some pain in the left side, and at times a degree of dyspnœa, with

quick breathing, but it was neither constant nor severe; and, when asleep, his breathing was quite natural. His appetite was good, and bowels natural; his pulse generally 100, or above it, but quite regular. The most prominent symptom was a strong pulsation of the heart, which was constant and violent. He died gradually exhausted, without any other symptom.

Dissection.—The pericardium adhered intimately to the heart through its whole extent. It adhered also to the neighbouring lung. The right lung was adhering, and slightly hepatised, and much gorged with blood. On cutting into it, a cavity was laid open, the size of a pigeon's egg, full of watery fluid. The left lung was much loaded with frothy mucus. The spleen was enlarged, and tubercular.

CASE VIII.

A woman, aged about thirty, had been for several years affected with violent action of the heart, and uneasiness in breathing; and the complaint had originally supervened upon an attack of rheumatism. In 1820 she became dropsical, and the dropsy increased rapidly. When I saw her, a fortnight before her death, her breathing was very much oppressed; the pulse frequent, but regular; there was extensive anascarca; and the enlargement of the abdomen was so great, that it was necessary to relieve her by tapping. The strong pulsation of

the heart had ceased for some time since the abdomen became so much enlarged, but it returned immediately after the tapping. She died in eight or ten days after this.

Dissection.—The pericardium adhered to the heart through its whole extent. The opening betwixt the left auricle and ventricle was reduced to a narrow slit, by the valves being much thickened, adhering to one another, and entirely immoveable. The opening betwixt the ventricle and the aorta was also diminished, though in a smaller degree, and the valves also very much thickened, though not as in the other entirely immoveable.

This highly dangerous and insidious affection occurs to us most frequently in connection with rheumatism; but it may also supervene upon any other febrile disease, or it may come on in an idiopathic form, without any previous disorder. In its connection with rheumatism, it may either attack when the rheumatic inflammation has suddenly receded, or it may appear at the termination of the disease, when the rheumatism has yielded in the ordinary way; or it may appear without any change in the rheumatic symptoms, and both complaints go on together. The symptoms vary considerably in different cases. In some there is pain in the region of the heart; in others none. The breathing is generally more or less oppressed, but sometimes in a slight degree; while in other cases the oppression is so sudden and violent, as to prevent articulation,

and threaten instant death. There is, in general, strong pulsation of the heart ; in many cases so violent, that it can be felt over every part of the thorax, and even by the hand laid upon the abdomen. In some cases there is vomiting, and in some cough ; but cough is not a regular symptom. The pulse is generally frequent, sometimes extremely so ; but in other cases it is little affected, and it has even been observed below the natural standard. Respiration is sometimes hurried, but not uniformly so ; for in a severe case mentioned by Dr Wells, in which the pulsations of the heart were 190 in the minute, respiration was soft and easy, and not above 24. Attacks of syncope sometimes occur ; and in one case which has been communicated to me, syncope was induced by pressure upon the spot corresponding with the apex of the heart. The violent pain produced by pressure on the upper part of the abdomen, mentioned in Cases 2d and 3d, is also a symptom deserving attention. It seems to have been occasioned by the diaphragm being pressed upwards against the inflamed parts. Other modifications of the symptoms occur from the disease being complicated with pneumonia, and sometimes with gastritis. In this acute form it may be speedily fatal ; or it may terminate by adhesion of the parts, and be fatal in ten or twelve months. A very small proportion of the cases have terminated favourably. This highly dangerous affection seems not to have been accurately investigated until about the year 1803-4. From that time to the year 1816, about forty cases

of it were published by Sir David Dundas, Drs Wells, Pemberton, Marcet, and others ; and such was the formidable character of the disease in their experience, that only one of the cases is reported to have finally recovered ;—twenty-five died in periods of from one to ten months ; one was alive at the date of the account, but was not likely to recover ; four had recovered tolerable health, but were liable to palpitation and dyspnœa upon exposure to cold or any exertion ; the remainder were hospital cases, dismissed with the disease going on in the chronic form, after the first urgency of it had subsided. Since 1816, the accounts are rather more favourable, but still the affection is to be considered as one of extreme danger, and the first symptoms of it are to be watched with the utmost care. A remarkable feature in it is, that it is not in general speedily fatal, like other inflammations of vital organs ; and the principal danger to be kept in view in the treatment, is such a partial activity as shall relieve the urgent symptoms, while the disease is not subdued. The prognosis, therefore, must be extremely guarded, for even when the most active practice has been employed, and the disease appears to be subdued, the adhesion may have taken place, and the evil be irremediable.

The disease occurs in a more chronic form, in which it steals on slowly and insidiously without exciting much alarm. This form also may supervene upon rheumatism, or may come on without any previous disorder. After a rheumatic attack,

or after slight inflammatory symptoms like a severe cold, the patient begins to feel a pulsation in the region of the heart, more or less violent, at first probably not constant, but excited by any exertion; the attacks being accompanied by some degree of breathlessness, a feeling of suffocation, and sometimes a remarkable throbbing in the head. The affection goes on gradually increasing,—the pulsation becomes permanent,—the attacks of dyspnœa more frequent and severe; till at length dropsical symptoms appear. In some cases the pulsation is not perceived, while the patient is lying perfectly still in the horizontal posture, but is excited by the least exertion, or by rising into the erect posture. On dissection, in both forms of the disease, we generally find the extensive adhesion of the pericardium to the heart, or sometimes, though more rarely, both surfaces covered with coagulate lymph, without adhesion. In the cases which have gone on for a considerable time, the heart is generally enlarged. This enlargement seems to be in many cases confined to the left ventricle, and to consist of an enlargement of the cavity, without thickening of the parietes. In a case by Dr Baillie, it contained ℥ij. of blood. The substance of the heart is generally found pale, soft, and flaccid; and, in some cases, the effects of inflammation have been found in the cavities, as deposition of coagulable lymph within the ventricles, or about the valves, thickening of the valves, and tubercles, or projections of various sizes, on the inner side of the auricle or ventricle. These also appear to have

been observed chiefly or entirely on the left side of the heart. A remarkable example of this disease of the valves occurs in Case 8th. It is a soft, fleshy thickening of them, with adhesion to each other, quite different in its characters from the induration or ossification commonly met with in these parts. In one remarkable case described by Dr Davis, the inflammation seemed to have been entirely seated on the inner surface of the heart, without any disease of the external parts.

The following case affords a remarkable example of the length of time during which the disease may be protracted, and the remarkable changes which may take place in the symptoms during the course of it.

CASE IX.

A young man, aged eleven, (in June 1817), had a rheumatic attack, with considerable swelling and redness of his ankles, and smart fever; and the affection was accompanied by strong pulsation or palpitation of the heart. After being confined for several weeks, the rheumatic symptoms subsided, and in August he was taken to the country, where he improved very much in his general health, but the strong action of the heart continued, though it did not appear to produce any inconvenience. On returning to town he became worse, and was confined the whole winter. In summer 1818 he was taken to Bath, where he was weak, and felt much oppressed

by the heat ; but, during all this time, the only marked symptom was the violent action of the heart. He was again confined during the greater part of the winter, the symptoms being aggravated by any exertion ; but, in spring 1819, he began to improve greatly, and in summer seemed to recover perfect health. During the following winter he walked daily to a very distant part of the town to school, took a great deal of exercise, learned dancing, &c. and appeared to enjoy perfect health. During all this period of so remarkable an amendment, however, the same violent action of the heart was felt by laying the hand on his breast ; but he seemed to suffer no uneasiness from it. He continued well during the summer of 1820 ; but in October of that year, he began to have uneasy breathing and some œdema of the ankles. These symptoms were relieved by the usual treatment ; but he continued in very precarious health during the following winter, being liable to a recurrence of these complaints, and not able for any exertion. In the summer of 1821 he again improved remarkably ; and during the following winter, was able to attend the University, and to take a great deal of exercise ; made little or no complaint, but the pulsation was still felt by the hand laid upon the thorax. In April 1822, after riding out in a very cold day, he was seized with rheumatic symptoms, accompanied by increase of the pulsation of the heart, and soon followed by uneasy breathing and anasarca, and from this time the disease seems to have made more rapid progress. I

saw him, for the first time, in June 1822, along with Mr William Wood, whose patient he had been from the commencement of his disease. At this time he looked well in the face, and the pulse was of natural frequency and good strength, with a very slight and occasional irregularity. There was considerable anasarca of the legs, and the action of the heart was pretty regular, but very strong and extended, conveying a tremulous motion to the ribs and sternum, which could be felt over every part of the thorax, and on the left side could be seen when the thorax was exposed. His breathing was somewhat oppressed, especially in the night, when he could not bear the horizontal posture, but required to be much propped up with pillows. The dropsical symptoms were again removed by diuretics, and after some time he went to the country, where he improved remarkably, and was able to take a good deal of exercise, till August, when he was attacked with symptoms resembling cholera. After this attack the anasarca returned; and he came to town in the middle of August, with the swelling in a greater degree than formerly, but without any change in the other symptoms. The anasarca did not now yield to the treatment which had removed it on former occasions, but continued stationary, or rather increased. Little change, however, was remarked in the other symptoms, until the evening of the 28th, when he complained of headach. This continued on the morning of the 29th; and early in the day he was seized with violent convulsion.

The convulsion returned during the day eight or ten times, leaving him comatose in the intervals, and he died in the night.

Dissection.—On opening the thorax, the heart appeared of enormous size, seeming to fill more than half the cavity, and pressing the lungs upwards. The pericardium adhered intimately to every part of the surface of the heart; and externally it adhered extensively to the diaphragm and the left lung. The enlargement of the heart was found to be entirely in the left auricle and ventricle, which were prodigiously enlarged and distended with dark grumous blood. The auricle was a great sac, containing at least 15i, and the ventricle was enlarged in a still greater degree. Along the posterior part of this immense ventricle, the right ventricle was found lying in a collapsed state, a little elongated, but not diseased. The parietes of the left ventricle appeared rather thinner than natural, and the substance of it was pale, soft, and flabby. The aorta and its valves were healthy. The valves betwixt the left auricle and ventricle were thickened, and contained some nodules of bone. One half of the valve was considerably puckered and contracted; the other was elongated, and of a thick, firm, fleshy consistence. The aperture was quite free. The lungs were dark coloured, and much loaded with fluid. There was some fluid in the cavity of the pleura, and a small quantity in the ventricles of the brain.

In the following case, the disease appears in a

much more rapid form, and with a very important variety in the morbid appearances.

CASE X.

A young man, aged sixteen, in March 1821, had acute rheumatism, accompanied by pain in the thorax, and strong action of the heart; but was relieved by two full bleedings, and enjoyed good health till March 1822. He was then attacked again by rheumatism, and a few days after the attack felt some pain in the thorax; but it was so slight that he was not seen by any medical man for eight or ten days. The breathing then became uneasy; and on account of this he was visited by a medical man about twelve days after the commencement of the rheumatism. He had then considerable dyspnœa, violent action of the heart, pain and swelling of some of the joints, accompanied by some œdema of the legs, and scanty urine. Pulse 108. A bleeding was employed, followed by diuretics. I saw him about three days after this, or about the 15th day of the disease. He was then free from rheumatism; his breathing was very difficult, so that he could not lie down without much uneasiness; the pulse was frequent; and the action of the heart very strong and diffused. Though very doubtful of being able to arrest the disease at this advanced period, I recommended making the attempt, by free bleeding, which was accordingly used in the course

of the next three days to a great amount. This treatment was well borne, and there was considerable relief from it ; but the relief was only partial and temporary. The violent action of the heart continued, with considerable dyspnoea ; and after some time he was affected with anasarca. His breathing became more and more difficult ; so that he could not bear the horizontal posture ; the pulse frequent and extremely irregular. After continuing several weeks in this state, he improved remarkably ; the anasarca disappeared ; his breathing became much easier, so that he could lie in any posture ; the pulse from 80 to 90, and of good strength, but with some irregularity. The strong action of the heart continued, but without any other urgent symptom. He had continued in this state about a fortnight, when one morning, upon getting out of bed, he dropped on the floor, without any previous complaint, and instantly expired. This was about three months from the commencement of the disease.

Dissection.—The heart appeared very much enlarged ; and, upon further examination, the enlargement was found to be on the left side, where both the auricle and ventricle were very much enlarged, without thickening of their coats, and both were distended with grumous blood. The auriculo-ventricular valve of the left side seemed imperfect, one part of it being thickened and corrugated, so that it seemed incapable of fully shutting the aperture. The anterior surface of the enlarged ventricle was covered with small, red granulations ; but there was

no adhesion of the pericardium to any part of the ventricle. The only adhesion was at the base of the heart, where the enlarged auricle adhered to the pericardium by a space about two inches long, and one inch in breadth. The liver and spleen were both enlarged. There was very little effusion, and no other morbid appearance.

In the following case, the disease seems to have originated in an obscure inflammatory affection, unconnected with rheumatism. It exhibits another very remarkable complication of the morbid appearances.

CASE XI.

A man, aged forty-two, about four years before his death, was affected, after exposure to cold and fatigue, with pain in the left side of the thorax, and some uneasiness in breathing. From the account which was received, the symptoms do not appear to have been acute; but soon after he began to complain of palpitation or strong action of the heart, and became liable to attacks of difficulty of breathing, and occasional hæmoptysis. About a year before his death, he was first seen by Dr Davidson. He then complained of cough, difficult breathing, and pain in the thorax. His sleep was disturbed by frequent startings; urine scanty. Pulse about 96, feeble and irregular. The action of the heart was strong, undulating, and irregular,

and very extended, being felt along the sternum, and in the epigastric region. There was œdema of the limbs, and fluctuation in the abdomen. After the use of diuretics, the dropsical symptoms were removed, but returned after two months, when he was again relieved by the same means, and for some time enjoyed better health than he had done for years ; the strong and extended action of the heart, however, continued, with dyspnœa upon any exertion beyond the most gentle exercise. In October 1822, the dropsical symptoms returned, with much dyspnœa, and inability to lie in the horizontal posture ; and after protracted suffering he died in January 1823. At various times he had been affected with uneasiness in the region of the liver, which was felt to be somewhat enlarged ; and, for some time before his death, he had complained of deep-seated pain in the lower part of the abdomen, which was increased by pressure ; but he had no pain in passing his urine, and the functions of the bowels were natural.

Dissection.—On opening the thorax, the pericardium was found adhering extensively to all the surrounding parts. It adhered also to the whole surface of the heart ; and, lying betwixt them, there were found numerous small plates of bone, imbedded in the membrane which formed the adhesion ; they varied in size ; the greater part of them were of the size and thickness of the nail of a finger, but more irregular in shape. At the parts where they were situated, the adhesion was much stronger than

at the intermediate parts. The heart was not at all enlarged, or in other respects diseased. The liver was enlarged and indurated. The mesentery in several places, chiefly towards the lower part of the intestines, presented a singular appearance. At the part adjoining the intestine, it was so eroded that the intestine was connected with the healthy part of it by the vessels only, the membrane being entirely removed. This appearance extended at one place three or four inches along the course of the intestine, and about an inch and a half from the intestine backwards, along the course of the mesentery. The canal, in other respects, was healthy. There was much effusion in the thorax; that in the abdomen had been drawn off by tapping a few days before death.

On this interesting subject, I shall only add two examples of the disease treated successfully.

CASE XII.

On 21st January 1817, at seven o'clock in the evening, I saw a man, aged twenty-four, who was affected with acute rheumatism, chiefly seated in his wrists and ankles, especially the latter, which were swelled, extremely tender, and highly inflamed. He complained of an acute pain in the region of the heart, increased by inspiration; his breathing was so oppressed and anxious, that he was unable to lie

down, but was supported by pillows in a half sitting posture. The pulsation of the heart was so violent, that it was felt distinctly over every part of the thorax, and on the upper part of the abdomen. The pulse was 106, and intermitted about twelve times in a minute. The rheumatism had existed about a week; the pulsation of the heart had been felt for two days; the pain and dyspnoea had commenced on the morning of the 21st. A few hours before I saw him, he had been largely bled by Dr Beilby; and we immediately bled him again to between 30 and 40 ounces. After two hours more we found him considerably relieved. Pulse 112, and regular. The ankles still highly inflamed, and extremely tender. He was again bled to 18 or 20 ounces, when he fainted completely, and lay for a long time in a state of extreme collapse; the pulse scarcely to be felt. The inflammation now completely left his ankles; and he could allow them to be moved or pressed in any way without uneasiness; his breathing was quite easy, and the pulsation of the heart had subsided. On the following day he was free from uneasiness, and continued well, except from slight rheumatic pains, without fever, which subsided in a few days.

The following case is still more interesting, from the obscurity of the symptoms, the state of the pulse, and the manner in which the affection came on.

CASE XIII.

A lady, aged fifty-eight, of a full habit, and previously enjoying good health, was, on 6th September 1821, suddenly seized with severe lumbago. The pain was confined to the usual seat of that affection, and was so severe as to confine her to bed, incapable of motion, but was unaccompanied by fever, or any other symptom. She was visited by Dr Inglis, who advised sudorifics, and the other usual remedies; and the complaint subsided in five or six days. About the 14th, she was able to come down stairs to the drawing-room, and continued well on the 15th, 16th, and 17th.

On Tuesday the 18th, she felt unwell; had some pain darting from the back to the breast, and round the left side, and a feeling of fluttering at the heart. But the symptoms were slight, and during the remainder of that day attracted little attention.

On the morning of the 19th she felt considerable oppression of the præcordia, with a constant and very uneasy pulsation of the heart, as if she were out of breath from quick walking. The pulse was frequent and irregular. She was now again visited by Dr Inglis, who bled her to $\frac{3}{4}$ xx.

On the 20th, the same symptoms continuing, she was bled again in the morning to $\frac{3}{4}$ xx. by Dr Inglis, and I saw her along with him about mid-day. She then complained of a feeling of weight and oppression across the region of the heart, and a constant,

uneasy pulsation, which was felt distinctly by the hand laid upon the thorax, and even on the epigastric region. It was not strong, however, but communicated to the hand an irregular, tumultuous feel; and she compared her sensations to that of the heart beating violently after some over-exertion. The breathing, however, was soft and natural, and she took a full inspiration without uneasiness. The pulse was very frequent and weak, and so extremely irregular that it was impossible to count it. She was again bled to nearly $\frac{3}{4}$ xx., a large blister was applied, and in the evening we found her much relieved; the pulsation had greatly subsided, and her feelings were comfortable; but the pulse continued irregular, though reduced in frequency. The blood was not buffy. She was left for the night, with an antimonial solution to be taken at intervals; but we were sent for at three o'clock in the morning. The pulsation of the heart had returned, with much oppression of the præcordia; the pulse, as before, very frequent, rather weak, and so extremely irregular, that it could not be counted. She was bled to about $\frac{3}{4}$ xx. When this quantity was taken, she became very sick and faint, vomited repeatedly, and continued for a considerable time sick. As the sickness went off, she felt the pulsation subside, and soon after she fell asleep.

21st.—The pulse was 76, soft, regular, and of good strength. The pulsation of the heart had entirely subsided, and she was free from any uneasiness. Began to take some digitalis.

On the 22d, continued well, and the pulse regular, about 70. On the evening of the 21st had felt some return of the lumbago.

On the morning of the 23d, she continued pretty easy, but there was a slight pulsation to be felt by the hand, and the pulse had become again irregular. On account of these symptoms, she was again bled to \bar{z} xviiij. or xx., which she bore well. From this time, by spare diet and quiet living, she continued to improve, but for some weeks the slightest exertion produced irregularity of the pulse. She had also some œdema of the legs, which was easily removed by diuretics, and by the end of October she was in good health, though liable to palpitation from any exertion. Early in the winter she had another attack, which, however, was slighter than the one now described, and yielded more readily; but, since that time, her pulse has been always irregular, and she is liable to strong action of the heart, upon any exertion or exposure to cold. In other respects she enjoys good health.

I have seen nothing in the least degree resembling the following case, which may be introduced in this place, as it has some analogy to the subject of the preceding observations.

CASE XIV.

A boy, aged five years, in the beginning of April 1820, had rheumatism of his knees and ankles, which

were considerably swelled for a day or two. The swelling then subsided, and the pain went off in about a week. He then continued pretty well for a fortnight, during which time he complained of nothing, except that he frequently mentioned a singular numbness of both his thumbs.

On Friday the 29th, late at night, he complained of nausea, and vomited twice ; was restless in the night, and frequently sick ; the sickness came on in paroxysms, and during them his breathing was rather oppressed.

On Saturday the sickness and vomiting continued occasionally, and he breathed a little quick ; but he did not complain of any pain. Pulse 110. Bowels open. Was seen by Dr J. Campbell.

Sunday.—Seemed better ; was cool ; no vomiting : breathing still rather quick ; was sick at times through the day, but at night was better, and took food. At three o'clock in the morning he became very restless, but complained only of excessive sickness ; no vomiting ; breathing quick.

On Monday I saw him about mid-day. He was pale, cold, and exhausted ; breathing quick ; pulse frequent and feeble ; complained only of sickness, but pressure on the abdomen gave uneasiness ; the action of the heart felt irregular and tumultuous ; he was quite sensible. Died early in the afternoon.

Dissection.—All was sound in the abdomen. In the right cavity of the pleura there was effusion to the extent of six or eight ounces. The lungs were

healthy. On the apex of the heart there was some inflammation, with slight deposition of coagulable lymph. In cutting out the heart, by dividing the great vessels within the pericardium, a sac was laid open which discharged about 3ij. of a transparent, viscid fluid, like the albumen of an egg. The sac was seated on the outside of the heart, was most nearly connected with the left auricle, and extended along the course of the great vessels, lying behind them. It was of an oblong shape; internally presented a smooth whitish membrane, and its coats were very firm. No other disease could be discovered.

The active aneurism of the heart seems to arise either from organic obstruction to the transmission of the blood, or from such an imperfection of the valves, as allows the column of blood to act backwards upon the cavity from which it was issued; the muscular parts in both cases being in a sound and vigorous state. The enlargement which supervenes upon inflammatory action, on the contrary, appears to be owing to an impaired condition of the muscular power produced by the inflammation, the cavity becoming incapable of emptying itself, and being gradually dilated by that impulse which, in the healthy state, would have excited it to contraction. That inflammation does impair the action of muscular parts, we see in other parts of the body; and it is more likely to do so in the heart

than in any other part, from its incessant action, and the strong and uniform impulse which is required at each contraction. The affection is usually accompanied by adhesion of the pericardium; but, in the preceding cases, we have seen that the enlargement may exist without adhesion, and the adhesion without enlargement. Perhaps these varieties may be accounted for by supposing, that the inflammation is in some cases confined to the membranous parts, without affecting the muscular fibre; in others, has its seat in the muscular parts; or that, in such a case as Case 10., the inflammation was so far arrested as to prevent the adhesion, while the treatment was not adopted in time to prevent the deleterious influence of the disease upon the muscular power.

The pathology of the heart as a muscular organ, presents a most interesting subject for investigation. When we recollect how muscular organs in other parts of the body are liable to be deranged in their functions, from a variety of causes; and when we consider the delicacy of the muscular structure of the heart,—its incessant action, and the necessity for the different parts preserving, in the nicest manner, their relation to each other,—we cannot wonder that this action should be occasionally deranged, or that, when it is deranged, alarming symptoms should be the consequence. In this principle we are probably to seek for the explanation of some of those obscure affections of the heart, which have been generally included under the term Angina

Pectoris. This term, in the sense in which it has been commonly used, has been made to include affections which seem to differ considerably from each other; and it is now, I imagine, generally admitted, that they cannot be always traced to any organic affection of the heart. The ossification of the coronary arteries, to which this affection has been referred, is now known to be very often wanting; and, on the other hand, such ossification may be observed in a very extensive degree, without any symptoms of Angina Pectoris. In the history of the symptoms, we observe varieties equally important. We find all the symptoms of angina pectoris continue for a considerable time, and then entirely disappear; and, in other cases, we find them recurring at long and uncertain periods, leaving in the intervals all the functions going on in the most healthy manner. I see no principle upon which these cases can be explained, except a derangement of the muscular action of the heart. The term Spasm has sometimes been applied to them: the phenomena appear rather to favour the conjecture of diminished action, one of the cavities being loaded with blood, which it is unable to expel, and thus interrupting the harmony of the whole. It is probable that such a condition of the parts may occur as an incidental and temporary affection, and that, after continuing to recur for some time, it may be removed, and the parts be restored to their healthy relations. But, it is also probable, that after it has once taken place it may be more and more liable to recur from slight

causes, until it terminate in permanent diminution of the muscular power of some part of the heart, and this be followed by permanent enlargement. The subject is one of much interest, because it is probable that the affection is often of such a nature, that it may be arrested in its progress by minute attention at an early period ; but, if allowed to advance to a certain stage of its progress, will terminate in hopeless disease. The causes of such an affection are extremely obscure. Perhaps a slighter degree of the rheumatic inflammation may lay the foundation for it in some cases, so slight as to escape observation when it first takes place. Perhaps over-excitement may derange the muscular power, as we sometimes find patients referring the origin of diseases of the heart to violent exertions in running. But, in many cases, no cause can be traced, and the subject, it must be confessed, is involved in much obscurity.

Without attempting at present any general conclusions on this important subject, the three following cases may be worthy of being recorded, shewing Angina Pectoris, with ossification of the coronary arteries,—the disease without any such appearance,—and extensive ossification of the coronary arteries, without any symptom of angina pectoris.

CASE XV.

A gentleman, aged seventy, strong and active for his time of life, a few years before his death had se-

veral apoplectic attacks, from which he had entirely recovered. For the last twelve months, he had repeatedly experienced symptoms like slight attacks of angina pectoris, which affected him while walking, with a pain in the region of the heart, extending along the left arm. It went off entirely upon standing still; had occurred at long intervals, and never excited much attention till 14th February 1822, when he was seized, while dressing in the morning, with a very severe attack of pain, extending from the region of the heart along the left arm, and accompanied by headach, flushing and turgidity of the face, and oppression of the breathing. It soon went off, but returned a short time after, when he attempted to walk out; and again, in the forenoon of the same day, when he attempted to walk up a steep street,—so severely, that he was taken into a shop, and carried home in a sedan-chair. He was now seen by Dr Hay, who bled him from the arm. His pulse at this time was 60. In the evening he was free from complaint, but his pulse was remarkably sluggish, being sometimes so low as 36. He passed a good night.

On the 15th, he was free from complaint the whole day; but soon after going to bed at night, he was seized with severe pain in the left side of the thorax. He was seen by Dr Hay at three o'clock in the morning, when the pain continued unabated, accompanied by headach; the pulse 80, and rather irregular; the breathing much oppressed. Bloodlet-

ting, and all other judicious means, were employed without relief.

16th.—I saw him, along with Dr Hay, at 10 A. M., when the attack continued unabated; the pulse from 80 to 90, and of moderate strength. About mid-day all the symptoms were aggravated; the breathing more oppressed. The pain continued unabated, with great anxiety and restlessness, and a feeling of inexpressible anguish in the thorax. It was aggravated by the horizontal posture, but he could take a full inspiration, without increasing his uneasiness; the pulse had ceased in the left arm, and was very feeble in the right; the extremities cold; but he could get out of bed and return to it without assistance. He lived in this state till six o'clock in the evening, having continued quite sensible to the last, and complaining of the severe pain in his breast till within a few minutes of his death. Farther bloodletting, and all the other usual remedies, had been employed without the least relief.

Dissection.—The lungs were quite healthy. There was a small quantity of fluid in both cavities of the pleura. The heart was enlarged, and loaded with blood. The coronary arteries were considerably ossified in various places; and on cutting into the right ventricle, its substance felt in many places gritty, from numerous, small, osseous particles. The semilunar valves of the aorta were thickened, and, both in their substance and at their origin, presented numerous small nodules of bone. The mitral

and tricuspid valves were affected in the same manner, though in a slighter degree. The pulmonary artery and its valves were healthy. The ascending aorta was considerably enlarged, internally covered with scales of ossification, and in some places the inner coat was destroyed. No other disease could be discovered.

CASE XVI.

A gentleman, aged fifty, of a full habit, consulted me first in July 1821. At that time he complained of an obscure uneasiness across the epigastric region, occasional palpitation, and a pain in the region of the heart, which attacked him at uncertain periods, especially if walking quick or up-hill. On these occasions it generally obliged him to stop; and if he attempted to persist in walking, vomiting was induced. In the night-time, he was occasionally seized with difficult breathing, accompanied by a pain extending from between the shoulders to the sternum, so violent as to oblige him to get out of bed immediately. His pulse was regular, and his general appearance that of robust health. The complaint was of two years standing. At its commencement, it came on suddenly while walking; and the first attack was accompanied by a sensation “as if a fluid ran from the right side of the chest to the left side, and then stopped suddenly, passing through a space of three or four inches.”

Soon after I saw him, he went to the Continent, where he thought himself considerably better. He returned to London in 1822, where he was frequently seized in the night with attacks of violent dyspnœa. He returned to Edinburgh in the beginning of winter. In the night of 23d December, he was seized with one of these attacks of dyspnœa, so severe as to threaten instant death. He was described to me by a surgeon, who saw him in the attack, as affected with the greatest degree of dyspnœa; his face livid; his body cold, and covered with a clammy sweat; his pulse scarcely to be felt. He was unable to speak, was nearly insensible, and appeared moribund. In this state he continued about two hours, and then gradually recovered. He consulted me again on the day following this attack. He was then in his usual health, and described his symptoms precisely as he had done in 1821, with the addition of these severe attacks of dyspnœa, which, however, had only occurred a few times, and at long intervals. He had also been lately seized, while in bed, with pain in the arms, extending across the chest, and accompanied by some dyspnœa, cough, and expectoration. He lay with greatest ease on his back. If he turned to either side, especially the right, he was apt to cough. His pulse was a little frequent, but regular; and his general appearance was still that of robust health. There was nothing unusual to be felt in the action of the heart. His urine was rather scanty. He was now put upon a regulated diet, with attention

to his bowels, some diuretics, and confinement to the house, the weather being very cold. Under this plan he improved remarkably, and in the subsequent visits which I paid to him, he made little or no complaint. His nights were much better; his breathing easy; his pulse quite natural. My last visit to him was on 16th January 1823, when he seemed in excellent health and spirits, and made no complaint, except that he was becoming very impatient of confinement. In the following night he was seized with a fit of dyspnœa, and was dead in a few minutes, before a surgeon, who lived in the floor above, reached his apartment.

Dissection.—The lungs were much loaded with blood, but in their structure quite healthy. The right cavities of the heart were natural; the left auricle and ventricle were considerably enlarged, and loaded with blood; their parietes appeared about the natural thickness, except a small part near the apex of the heart, which was remarkably thin. All the valves were quite healthy; and no other morbid appearance could be discovered, except a remarkable enlargement of the opening betwixt the left auricle and ventricle. They had quite the appearance of one continued cavity, with scarcely any division; and it appeared evident, that the valve could have had but a very imperfect action in shutting the opening. There was some bloody fluid in the cavity of the thorax, and a slight appearance of ossification at the commencement of the aorta.

CASE XVII.

A gentleman, aged sixty, of intemperate habits, was affected, in summer 1821, with anasarca of the limbs, and a yellow tinge of his eyes ; and, soon after, swelling with fluctuation took place in the abdomen. His urine was scanty ; but the breathing was quite easy, and the pulse natural. The usual remedies were employed for some time, without effect, the swellings having rather increased, and the urine continuing very scanty. At length, about the beginning of August, a favourable change seemed to take place. The urine increased, and the swellings diminished ; the other functions continuing quite healthy, except that his appetite, which had been previously good, had been rather impaired for a few days. My last visit to him was on the morning of the 7th of August ; he had passed a good night ; the urine was abundant, and all the swellings much diminished ; the pulse quite natural, and of good strength. He was still in bed ; but was preparing for getting up. In less than half an hour after my visit, being still in bed, he became livid in the face, without making any complaint, and instantly expired.

Dissection.—There was considerable effusion in the abdomen, and the stomach and the arch of the colon were remarkably distended with flatus. The liver was not enlarged, but indurated, and its whole surface covered with small, hard tubercles, of a black colour ; internally, it was of a dark brownish-yellow

colour, and indurated throughout. The lungs were healthy, and there was no effusion in the thorax. The heart was remarkably soft and flaccid, and all its cavities were empty. There was most extensive ossification of the coronary arteries, one of which in particular could be traced for nearly three inches in one continued cylinder of bone, and sending off branches in the same state. Several of the valves were partially ossified. The brain was healthy. —The ossification of the coronary arteries in this case was much more extensive, and much more remarkable, than in Case 15th.

Case 16th, I think, must be considered as a pure example of disease of the muscular action of the heart; and it is particularly remarkable, from the healthy manner in which the functions were performed in the intervals between the attacks, especially for a considerable time before the attack which was fatal. The state of the auriculo-ventricular aperture, is a remarkable feature in the case. I do not know whether it is to be considered as cause or effect. A similar appearance of this aperture occurred in the following case, in which the disease seemed to be brought to a fatal termination by an attack of continued fever.

CASE XVIII.

A girl, aged thirteen, had been for a long time liable to sudden attacks of pain in the region of the

heart, and considerable oppression of breathing, which seized her upon making any exertion, such as quick walking or running, or going quickly up a stair, and obliged her instantly to stand still. She was, in other respects, in tolerable health, when, in the beginning of July 1809, she was seized with symptoms of continued fever. For the first week, the symptoms were mild and favourable. About the 8th day, she was observed to have a peculiar quickness of breathing, which occurred only at times, and lasted for a minute or two. After a few days it increased, the breathing during the attacks being quick, with appearance of much oppression and uneasiness in the thorax, and every expiration was accompanied by a noise like a shrill, feeble cry. The attack was accompanied by a violent heaving of the abdomen, and, while it lasted, she was unable to swallow, and often unable to speak. The heart throbbed violently; the face was flushed, inclined to a purple colour, and the pulse extremely frequent. When able to express her feelings, she complained of pain in the epigastrium, extending along the margin of the ribs. These paroxysms were of various duration, from a few minutes to half an hour; they were excited by any exertion, as getting up to stool, coughing, and sometimes by speaking; they occurred generally several times a-day, the longest interval was twenty-four hours, and that occurred only once. During the intervals, the symptoms were those of mild continued fever, without any pain, or any symptom in the thorax. A variety of

practice was employed for ten days, with little benefit: continued free purging seemed to have more effect than any other remedy in suspending the paroxysms, but they always recurred with increasing severity; and, about the 18th day of the disease, the breathing became permanently hurried and oppressed; the pulse 160, but of good strength; the face livid; and every appearance of immediate death. In this state she lay for three days, and died in the morning of the 22d.

Dissection.—The bowels were considerably distended with flatus, and were in some places of a livid colour. The lungs were remarkably pale in their colour, and perfectly healthy. The heart appeared flaccid, except the right auricle, which was much enlarged, and its substance so thin from distention as to be transparent. The aperture betwixt it and the ventricle seemed larger than usual, and the valve corrugated and diminished in extent, so as to appear not capable of shutting the aperture. On the left side of the heart, the aperture and valves had quite the natural appearance, and no other disease could be detected in any of the viscera.

CASE XIX.

An infant, aged three months, had quick and very laborious breathing, each inspiration being performed with such an effort, that the edges of the ribs were drawn inwards by the violent action of the

diaphragm. The breathing was extremely irregular in frequency, and there were paroxysms of aggravations of all the symptoms, accompanied by a peculiar convulsive sobbing. The pulse was extremely frequent. The affection had been observed in a greater or less degree for about two months. He died in another fortnight.

Dissection.—The heart was very large ; so that, on first opening the thorax, it seemed almost to fill the cavity. The enlargement was chiefly in the left auricle, which was prodigiously distended, and full of blood. The opening between it and the ventricle was uncommonly large, so that the valve did not appear capable of shutting it. No other disease could be discovered.

In many affections of the heart, an appearance occurs, in regard to which there was formerly considerable diversity of opinion,—I mean the deposition of fibrin in the cavities of the heart, in the form of polypous concretions. It is not now considered as a cause of disease, as it appears to have been in the days of Morgagni ; but it is frequently met with in cases in which there had been symptoms of disease in the heart, and I think it is not altogether unworthy of attention. Perhaps it may be considered as an effect of disease,—of some such morbid action of the parts as has been referred to,—in consequence of which the ventricle contracts imperfectly, never entirely emptying itself of blood. In the following case, it occurred in such a remark-

able extent, that it could not be considered as an incidental occurrence.

CASE XX.

A gentleman, aged sixty, had been liable for six years to palpitation of the heart and dyspnœa. After some time, he became dropsical; was often relieved by diuretics; but the dropsy always returned after various intervals, the intervals becoming shorter. Four years before his death, he was seized with hemiplegia of the right side, and his speech was considerably affected. From these symptoms he never recovered. When I saw him, along with Mr William Brown, a short time before his death, there was a strong and irregular pulsation of the heart; the pulse was weak, irregular, and rather frequent. He was liable to severe attacks of dyspnœa, and occasionally to fits of extreme faintness and coldness. He had general dropsy, palsy of the right side, and inarticulate speech. He died, gradually worn out by protracted suffering, in September 1818.

Dissection.—There was extensive effusion, both in the thorax and abdomen. The pericardium adhered to the pleura costalis by a firm, narrow band, less than an inch in length. The heart was much enlarged. Upon opening the right ventricle, the cavity was found much enlarged, and completely filled and distended by a firm, solid mass of fibrin, of a light yellowish colour, without any appearance of blood. On

removing the mass, which was of very great size. a small quantity of blood was found below it. The left ventricle was also enlarged, and was full of grumous blood. No disease could be discovered in the structure of the heart, after the most careful examination, except that the substance of it appeared paler than natural. The enlargement seemed to consist in the dilatation of the cavities, without increase of substance. The aorta was sound. The lungs were much loaded with fluid, and a little indurated. In the anterior part of the left hemisphere of the brain, a portion of the cerebral substance, the size of a large walnut, was of a brownish-yellow colour, and much indurated, except at its lower part, where it was approaching to suppuration.

There are various other affections of the heart, which I think can only be accounted for by the supposition of deranged muscular action, of a slighter and more transient nature. A gentleman who has frequently consulted me, is affected in the following manner. In an instant, and without any warning, he is seized with a most painful feeling in the region of the heart, with severe anxiety and oppression across the thorax, and his pulse becomes feeble and very rapid. There is no dyspnœa; but, on the contrary, he attempts to relieve his uneasiness by frequent and very deep inspirations, which are performed without any difficulty. While the lungs are inflated in the state of full inspiration, a sound is heard by himself, and by a person sitting near him, exactly resembling the loud tick of a watch:

it corresponds in frequency with the frequency of the pulse, and is only heard while the lungs are fully inflated; but it continues to be heard as long as he keeps them inflated, by resting upon the deep inspiration. The attack generally continues from fifteen minutes to half an hour, and then passes off in an instant, with a feeling of some obstruction suddenly giving way. Every uneasy feeling is then instantly removed, and the pulse becomes full, soft, and regular, and of the natural frequency. He is sometimes free from the affection for several weeks. At other times it returns daily, or once in two or three days. In the intervals he enjoys excellent health, and he has been liable to the complaint for twenty years. He is now about sixty or upwards; and the affection does not appear to have had any injurious effect upon his general health.

To these desultory remarks, I shall only add one case of active aneurism of the left ventricle, accompanied by an appearance which is very uncommon.

CASE XXI.

A man, aged about forty, received a severe injury of the left side of the thorax, by a fall from a horse. He soon recovered from the immediate effects of it, but was from that time affected by a train of obscure symptoms in the thorax, which, after a considerable time, began to assume the charac-

ters of an affection of the heart. There was obscure deep-seated pain, with occasional attacks of dyspnoea, and a remarkably strong, but regular, pulsation of the whole arterial system, particularly a peculiar and strong jarring of the carotids and subclavians; the pulse generally about 120. The action of the heart was rather stronger and more extended than natural, but by no means corresponding with the remarkable strength of the arterial pulsations, upon which large and repeated bloodletting made almost no impression. His breathing became more and more difficult, with extensive anasarca, and he died about five months after the period of the fall.

Dissection.—The left ventricle was nearly twice the capacity of the right, and in its substance much thickened, and very firm; the columnæ carneæ were much enlarged. One of the semilunar valves presented the appearance of a ring, its body being perforated by a irregular opening, which occupied the greater part of it, and gave an appearance as if it had been torn from its attachment along its base, remaining attached only by the two angles. The other valves were healthy. The right ventricle appeared somewhat enlarged; and the right auricle was nearly twice its natural size, and very thin.

The prominent symptom in this case was the peculiarly strong pulsation of the arterial system, especially of the large arteries about the neck. The

pulsation of the heart did not by any means correspond with it, and indeed was much less remarkable than in some of the preceding cases, in which the ventricle was enlarged without thickening. It is also worthy of observation, that a strong and extended pulsation may exist without enlargement. This was most remarkable in Case 11th, in which it was probably produced by the extensive adhesions.

II. *Organic Affections.*

Under this head, I intend merely to introduce a few cases, which appear to present some phenomena differing a little from the ordinary cases of organic disease of the heart.

CASE XXII.

A lady, aged thirty, had been for four or five years affected with pectoral complaints, which for some time had been considered as consumptive. When she came under my care, in the end of 1811, she had a severe suffocating cough, with frequent attacks of dyspnœa. She was liable to frequent and violent palpitation of the heart; and at all times the pulsation of the heart was stronger than natu-

ral. She had frequent pain in the breast, and a painful sense of stricture across the thorax. The attacks of palpitation occasionally terminated in loss of sense and motion, or a state resembling asphyxia, which continued for a few minutes. She had also repeated attacks of loss of vision, in which an object disappeared gradually, as if a cloud had passed over it, and reappeared in a few seconds in the same manner. She had afterwards enlargement of the abdomen, extensive œdema of the lower extremities, with scanty urine, severe and permanent dyspnœa, frequent and violent palpitation of the heart; and, after various remissions and aggravations, died gradually exhausted by accumulated distress in November 1812. The pulse had continued regular until a week before her death.

Dissection.—There was some effusion in the abdomen. The stomach was prodigiously distended, so that it appeared to have formed the principal part of the tumefaction of the belly. The lungs were extensively adherent; the left was tolerably healthy in its structure; the right was dark coloured and hepatised. There was very little effusion in the thorax. The left auricle of the heart was very much enlarged, and contained two remarkable bodies. The one was a spherical cyst about an inch and a half in diameter, full of dark coloured, tenacious fluid. The cyst was externally of a dark brown colour, nearly black; and in the fluid which filled it, there were several membranous substances of the same dark colour, like similar cysts in a col-

lapsed state. The other body was a cup or hollow hemisphere, of a diameter exactly corresponding with the spherical cyst, taking in the half of it. It was about one-third of an inch in thickness at the bottom, and became gradually thinner towards the mouth, where it terminated in a thin margin. It was of a light brownish or ash colour, and a firm, fleshy structure, and composed of concentric laminae, eight or nine of which could be separated from each other at the thickest part of it. It was found lying loose in the cavity of the sinus; but on the outer surface of it, at the bottom, there was an irregular roughness, as if it had been torn off from some attachment to the parietes of the auricle. The spherical cyst did not appear to have had any attachment. The mitral valves were slightly ossified*.

CASE XXIII.

A man, aged forty, (12th June 1814), complained of quick and oppressed breathing, and slight pain in the left side of the thorax; but he had little or no cough. His pulse was extremely frequent, and so fluttering and irregular, that it could not be counted. He had been ill about a week, but much worse for the last day or two, so that he could not lie down. After a bleeding, and the other usual

* A case very similar to this has been described by Mr William Wood in the Edinburgh Medical Journal, vol. x.

remedies, he was very much relieved; and after three or four days he made no complaint. His breathing was quite easy, his appetite good, urine natural, and he had no cough; but his pulse continued about 160, not to be counted with accuracy, on account of its extreme irregularity. In this state he went to the country on the 20th. I saw him again in the end of July, and found his pulse in the same state, but with scarcely any other symptom. He had walked from the country, a distance of six miles, in a very hot day, and intended to walk back the same distance. His breathing, he said, felt at times a little short, but gave him very little uneasiness. I saw him again in 1815. He then felt unable for much exertion, but made no other complaint; his pulse was in the same state, not under 160. I heard no more of him till April 1816, when I found him moribund, with great dyspnœa, which had been of a few weeks standing.

Dissection.—The disease which had given rise to this singular train of symptoms, consisted of two small, round, osseous bodies, like small peas attached to one another, and each attached to one of the portions of the semilunar valve of the aorta, so as to fix the two pieces together near the apex of valve. The third portion was entirely in the natural state; and the attached portions were not otherwise diseased, except that at the attachment of the osseous bodies they were considerably corrugated. The effect seemed to be to diminish the extent of the portions, and consequently to leave an open

space betwixt them and the third portion, in the closed state of the valve. The free opening of the valve was also impeded by the attachment of the two portions. No other disease could be discovered in the heart. There was considerable effusion in the thorax. The other viscera were healthy.

The following case is chiefly remarkable from the pulse having continued so natural, while such extensive disease existed in the heart.

CASE XXIV.

A young lady, aged eighteen. I was first consulted about her in September 1822, on account of anasarca of the legs. No other symptom was complained of; but, on examination, I discovered a remarkably strong and extended pulsation of the heart, of which I could obtain no history, except that she had been for several years liable to palpitation, but had experienced no inconvenience from it. The pulse was quite natural. The anasarca soon disappeared under the usual treatment, and she went to the country in her usual health. Some weeks after she had cough, with pain of the breast, and was bled from the arm with relief. She then made no complaint; but the strong and extended action of the heart continued. In the beginning of winter, she had again cough, and considerable expectoration, which had a puriform character. The pulse slight-

ly accelerated, but quite regular. The strong action of the heart continued; and it appeared on close examination that it was not synchronous with the pulse, but seemed to alternate with it. She seemed to suffer little or no inconvenience from it. Through the winter she continued with little change, and no very urgent symptom. The cough varied; sometimes troublesome, and sometimes less so; the pulse regular, and very little above the natural standard. In the end of February she was out several times, but, in the beginning of March, the anasarca returned, with some hæmoptysis, dyspnoea, lividity of the countenance; and she died about the 20th, the action of the heart having continued as before, and the pulse nearly natural up to the day of her death.

Dissection.—On opening the thorax, the pericardium appeared to extend over a much greater space than usual: it adhered closely to the left lung, and the right adhered closely to the mediastinum, so as to form one continued uniform surface. On the outer surface of the pericardium, there was some deposition of coagulable lymph. Internally it contained a good deal of fluid, and was free from any adhesion to the heart. The heart was much enlarged, and presented a singular appearance, being distinguished into two separate portions, one of them of a deep purple colour, the other of the usual colour. The former was the right auricle, so enormously enlarged as nearly to equal all the other parts of the heart; it was thin, and completely distended with

dark grumous blood. The right ventricle was also much enlarged; the auriculo-ventricular aperture was large, and the valve corrugated. The left auricle was enlarged, and distended with grumous blood, and the auriculo-ventricular aperture was reduced to a narrow opening, by the thickening of the valve, and the adhesion of the parts of it to each other. The left ventricle was quite of the natural appearance, and the valves of the aorta quite healthy. The lungs were considerably hepatised; the left was much compressed by the enlarged heart.

Organic disease may exist in the heart without producing any urgent symptoms. But it appears that, even in these cases, it may be suddenly fatal.

CASE XXV.

A man, aged sixty, who had previously enjoyed perfect health, except occasionally slight dysuria, awoke early in the morning of 30th September 1812, complaining of violent pain in the upper part of the abdomen. It afterwards extended to the lower part of the belly, and was attended by suppression of urine. He had also great oppression of his breathing, and some vomiting. At nine in the morning he was found in a state of insensibility, and without pulse, and died about twelve.

Dissection.—The urinary bladder seemed a little thickened in its coats. No other disease could be

detected in the abdomen. In the brain, there was a very small quantity of bloody fluid in the ventricles. The valves of the heart were all more or less ossified, and at the opening betwixt the left auricle and ventricle, there was a large irregular mass of ossification, which extended about half way round the opening. The substance of the left ventricle was remarkably soft, as if from the effect of putrefaction, the finger being pushed through it with very little resistance, while no such appearance was presented by the right side of the heart, which was firm and healthy.

The state of the right ventricle in the following case was singular. It was probably an original formation.

CASE XXVI.

A man, aged thirty-five, had been for a year before his death affected with dyspnœa, and palpitation of the heart. He had afterwards extensive anasarca, and died very suddenly in June 1814.

Dissection.—There was considerable effusion in the thorax. The ascending aorta was hard, and covered with scales of ossification. The valves of the heart were slightly hardened. In the right ventricle there was a singular adhesion of its sides, about an inch and a half from the bottom, cutting off a cavity, into which a small finger could be pushed with difficulty, on each side of the adhesion.

The lungs were loaded with frothy mucus, but were not diseased in their structure.

CASE XXVII.

Perforation of the Septum of the Ventricles.—An infant, born in September 1821, shewed nothing unusual till four or five weeks after birth, when it was remarked, that when he either cried, or was exposed to cold, his hands and feet became of a livid colour. At first it went off entirely, but afterwards, during the winter, his toes and fingers were always more or less livid, and when he was exposed to the air, the lividity extended to his arms and legs, and appeared a little in the face. Nothing farther occurred till he was seven months and a half old, when he was suddenly seized with laborious breathing, accompanied by long and deep sighs ; the pulse rapid and irregular ; the action of the heart strong, but felt only at intervals ; the body cold. The attack went off gradually, and afterwards recurred at intervals of about four weeks, but became slighter. He died in the sixth attack, in October 1822. It was slighter than any of the preceding, and only resembled syncope. In the intervals between these attacks, he enjoyed good health, and appeared as thriving as the most healthy child of his age ; and during the summer the livid or blue colour of his extremities had nearly disappeared, except at the time of the attacks.

Dissection.—At the upper part of the septum of the heart, there was a round opening, more than half an inch in diameter, with smooth and rounded edges, making a free communication betwixt the ventricles.

III. *Rupture.*

I have met with two cases of rupture within the pericardium, and the symptoms were considerably different. The first might have been mistaken for apoplexy.

CASE XXVIII.

A man, aged about thirty-five, had complained for some time of headach, but had not been confined from his usual labour, which was that of a joiner. One evening he had returned from his work, and was sitting by the fire, when, in stooping forward to lift something, he fell forward on the floor and expired.

Dissection.—All was sound in the brain. The pericardium was found distended with coagulated blood; but owing to an error of the person who conducted the dissection, it was neglected to ascertain the spot where the rupture had taken place, until after the heart had been cut out and laid open, and then it could not be ascertained with accuracy.

CASE XXIX.

A woman, aged twenty-eight, of a plethoric habit, had for some time complained occasionally of pain in the left side, with difficult breathing; but the affection was slight and transient. On Tuesday, 15th July 1817, she walked to Musselburgh, and returned considerably fatigued. On Wednesday she kept in bed, and complained of pain extending from the left side of the thorax to the left shoulder, but it did not seem to be severe; and through the greater part of the day she was sitting up in bed, nursing a child whom she was suckling. Without any other symptom, she died very suddenly at five o'clock P. M., not having been seen by any medical man.

Dissection.—The pericardium was found distended with coagulated blood, which appeared to have been discharged from a small ragged aperture at the root of the aorta. It was of such a size as admitted a common quill. The aorta at this place was thin, and the whole of the ascending aorta was considerably, but uniformly dilated. The heart adhered extensively to the pericardium at the posterior part. There was some bloody fluid in the left cavity of the thorax, and the right lung adhered extensively. The other organs were healthy.

For the following remarkable case I am indebted to Mr George White, who intended to present it to the Society, but has kindly allowed me to introduce it here.

CASE XXX.

A man, aged seventy-seven, strong and muscular for his years, and able for the work of a labourer, while so employed on the morning of 19th March 1823, was suddenly seized with a pain of the chest, extending from the spine to the sternum. It was accompanied by an immediate and remarkable failure of strength; so that he got home with great difficulty, with the assistance of a fellow-labourer, and frequently stopping to rest by leaning his back against a wall, the distance being about a quarter of a mile. He then complained of great anxiety and oppression, but without dyspnœa; his pulse extremely small and feeble, but regular and not frequent. Nothing unusual was remarked in the action of the heart. He lived ten days in this state, with very little change in the symptoms. There was a constant dull uneasiness, occupying the region of the heart, and extending to the back; extreme anxiety and restlessness, leading him to seek relief from a constant change of posture; the pulse as before very feeble, but regular and without frequency. When in bed he generally lay on his

back, but was seldom observed to sleep, and often got up and sat by the fire, as if expecting some relief from the change. On the evening of the 28th his anxiety and restlessness increased; and in attempting to get out of bed, he suddenly expired. For three days before his death he had passed a considerable quantity of blood by stool. Twenty years before his death he received a severe injury by falling with a load upon his back; after which he was apt to start in his sleep, and never could lie on his left side, though otherwise in good health.

Dissection.—The cavities of the pleura contained about ℥iij. of fluid. The lungs were sound. The pericardium appeared greatly distended, and when opened was found to contain an immense quantity of coagulated blood. The heart was much enlarged, and very flabby; and it was covered externally by a layer of coagulable lymph, which was easily peeled off, and seemed to be of recent formation. The aperture from which the hæmorrhage had taken place was in the left ventricle, about half way betwixt the base and the apex, and close by the side of the septum. Externally, it was of such a size as would have admitted a catheter of the largest size, but internally this communicated with an ulcerated cavity the breadth of a shilling, by which the substance of the ventricle seemed to have been gradually eroded. This cavity communicated not only with the external opening, but also with the right ventricle, by a perforation of the septum. The left

ventricle was much enlarged, and its parietes were much thinner than natural. One of the semilunar valves of the aorta was partly ossified. The abdominal viscera were healthy.

Mr White is disposed to think, that, in this remarkable case, the rupture took place at the period of the first attack; and the small opening being stopped by a coagulum, the heart was enabled to continue its feeble action during the remainder of his life. I am rather inclined to think, that the first attack was connected with the erosion of the septum of the ventricles, and that the external opening immediately preceded his death.

IV. *Displacement of the Heart.*

This subject perhaps does not properly belong to the pathology of the heart, but the following cases seem worthy of being recorded. The first exhibits a very singular condition of the lungs, from which there is every reason to believe that, as the right lung was gradually destroyed by ulceration, the left became enlarged, so as to perform the function of both. The second case is chiefly remarkable from the rapidity with which the disease took place, and the obscurity of the symptoms.

CASE XXXI.

A gentleman who, at the time of his death, was twenty-one years of age, at the age of ten had suffered severely from measles, which left him affected with cough ; and the complaint was much aggravated by an attack of pneumonia in the following year. From that time he was never free from cough, with expectoration, which was distinctly purulent, and often in large quantity ; and he had repeated attacks of hæmoptysis. He was stunted in his growth, and of a feeble habit, but, in other respects, enjoyed tolerable health, and was able to attend to the business of his profession, till the beginning of July 1822, when he became affected with a disease of the brain, of which he died in three weeks. About three years before his death, it was first observed accidentally, that the pulsation of his heart was entirely in the right side ; but of the history of this peculiarity nothing farther could be learned from any of his friends.

Dissection.—On opening the thorax, the left lung first presented itself so enlarged as to occupy at least three-fourths of the cavity. It was quite healthy, except a small tubercular mass at the upper part, in a solid state. To the right of this lung was found the heart, so situated as to be in contact with the ribs of the right side. Behind the heart, and nearly concealed by it, lay the remains of the right lung,—a dark and fleshy mass, like the substance of the spleen. It was about four or

five inches long, about three inches broad, and an inch and a half in thickness. Internally, it contained a series of small abscesses, communicating freely with each other, and with the trachæa. There were four abscesses in the substance of the brain.

CASE XXXII.

A girl, aged twelve, had been liable to pectoral complaints upon exposure to cold, but for some time had enjoyed excellent health, when, on the 28th of April 1823, she complained of pain of the left side, with cough and difficult breathing; the pulse 120. After bleeding and the other usual remedies, she was relieved, and, for the five or six following days, she made little or no complaint; but the pulse continued from 100 to 120. On the 3d of May, a strong action of the heart was first remarked: it was not accompanied by any urgent symptom till the 6th, when the cough returned, with difficult breathing; and these symptoms continued on the 7th and 8th, without being relieved by any of the remedies that were employed. On the 9th, the breathing became extremely difficult, but was considerably relieved by topical bleeding. I saw her, for the first time, at 4 P. M. The breathing was then considerably oppressed. Pulse 120; her look pale and anxious. The action of the heart was strong and tumultuous, and was felt almost entirely in the right side. In the natural situation no pulsation was

felt. It began to be felt about the sternum, and was strongest about two inches to the right of the sternum. From this it was felt very strong all along the right side, and in the epigastric region. She died the same evening.

Dissection.—The left cavity of the pleura was filled by an immense quantity of thin and very foetid puriform fluid, amounting to several pounds. The left lung was compressed into a flat solid mass, in many places little more than half an inch in thickness, in others about an inch. It was covered by a firm layer of coagulable lymph, and was internally not diseased, except from the remarkable compression. The whole pleura costalis of the left side, the upper surface of the diaphragm, and the left side of the pericardium, were also covered by a thick and firm adventitious membrane. The heart was pressed towards the right side, or rather into the centre of the thorax behind the sternum. It was quite healthy. The outer surface of the right lung shewed marks of inflammation, with some deposition of adventitious membrane; and in the right cavity of the pleura there was a considerable quantity of a turbid, puriform fluid.

STATEMENT OF THE DEED

ALL that and singularly situate, lying and being in the County of ... State of ... do hereby certify that the within and foregoing is a true and correct copy of the original of the same as the same appears by the records of the County of ... State of ...

Witness my hand and seal of office this ... day of ... 19...

Notary Public for the State of ...